

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

**(19) World Intellectual Property Organization
International Bureau**



(43) International Publication Date
31 January 2002 (31.01.2002)

PCT

(10) International Publication Number
WO 02/08489 A3

(51) International Patent Classification⁷: C23C 16/44, H01L 21/00

(21) International Application Number: PCT/US01/22405

(22) International Filing Date: 17 July 2001 (17.07.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/220,039 21 July 2000 (21.07.2000) US
09/798,424 2 March 2001 (02.03.2001) US

(71) Applicant: APPLIED MATERIALS [US/US]; 2881 Scott Blvd., Mailstop 2061, Santa Clara, CA 95051 (US).

(72) Inventors: LUO, Lee; 222 Brunswick Place, Fremont, CA 94539 (US). HO, Henry; 6906 Lenwood Way, San Jose, CA 95120 (US). WANG, Shulin; 959 Steinway Avenue, Campbell, CA 95008 (US). TRAN, Binh, Hoa; 5528 Spinaker Drive #1, San Jose, CA 95123 (US). TAM, Alexander; 2451 Balmoral Street, Union City, CA 94587 (US). SANCHEZ, Errol, A., C.; 5291 Gilford Court, Dublin, CA 94568 (US). TAO, Xianzhi; 4217 McKellar Lane #5A, Campbell, CA 94306 (US). CHEN, Steven, A.; 2278 Quail Bluff, San Jose, CA 95121 (US).

(74) Agent: ADLER, Benjamin, A.; Adler & Associates, 8011 Candle Lane, Houston, TX 77071 (US).

(81) Designated States (national): CN, JP, KR.

(84) Designated States (regional): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
25 April 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

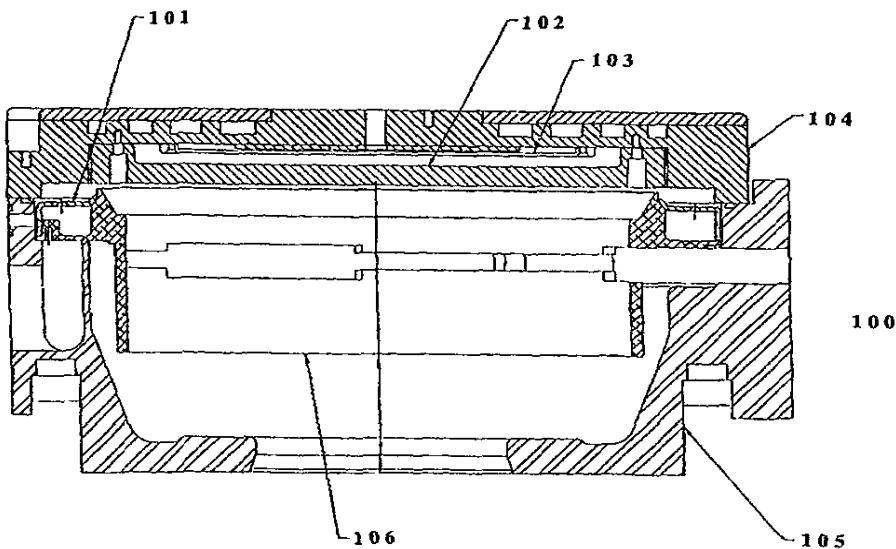
Published:

— with international search report
before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
25 April 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: EMISSIVITY-CHANGE-FREE PUMPING PLATE KIT IN A SINGLE WAFER CHAMBER



(57) Abstract: Provided herein is an emissivity-change-free pumping plate kit used in a single wafer chamber (105). This kit comprises a top open pumping plate (106), and optionally a skirt and/or a second stage choking plate (101). The skirt may be installed around wafer heater, underneath wafer heater, or along chamber body inside the chamber. The choking plate is installed downstream of the top open pumping plate along the purge gas flow. Also provided is a method of preventing emissivity change and further providing optimal film thickness uniformity during wafer processing by utilizing such kit in the chamber.

WO 02/08489 A3

INTERNATIONAL SEARCH REPORT

I.	International Application No PCT/US 01/22405
----	---

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C23C16/44 H01L21/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C23C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category [°]	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 909 836 A (EBARA CORP) 21 April 1999 (1999-04-21) column 6, line 3 -column 8, line 37; figures 1A,1B,2,3 -----	1-14
X	US 5 895 530 A (BRYANT TODD C ET AL) 20 April 1999 (1999-04-20) column 3, line 64 -column 8, line 14; figures -----	1,4,5,9, 10,13

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

11 February 2002

Date of mailing of the international search report

19/02/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5618 Patentlaan 2
NL - 2280 HV Rijswijk
Tel: (+31-70) 340-2040, Tx. 31 651 epo nl.
Fax: (+31-70) 340-3016

Authorized officer

Patterson, A

INTERNATIONAL SEARCH REPORT

Information on patent family members

b. International Application No
PCT/US 01/22405

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
EP 0909836	A 21-04-1999	JP EP JP US	11043773 A 0909836 A2 11158632 A 6176929 B1	16-02-1999 21-04-1999 15-06-1999 23-01-2001
US 5895530	A 20-04-1999		NONE	